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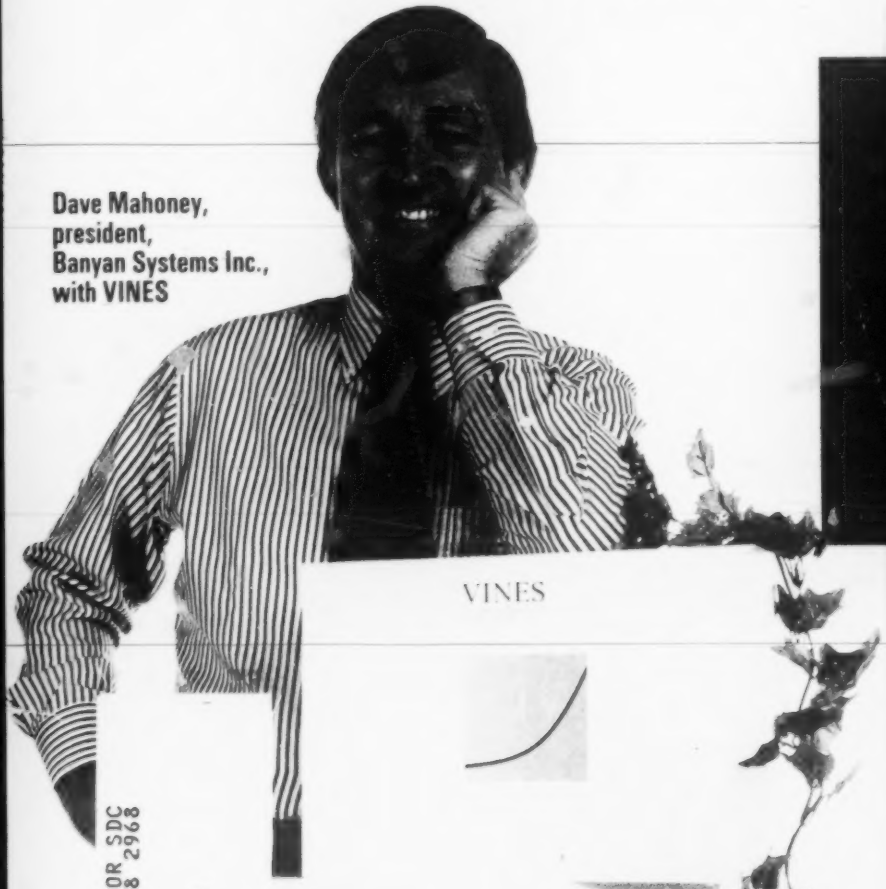
DATAMATION®

FOR MANAGERS OF INFORMATION TECHNOLOGY WORLDWIDE

MAY 15, 1991



Dave Mahoney, president, Banyan Systems Inc., with VINES

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CONGRESSIONAL INFO SERVI
4520 EAST WEST HWY
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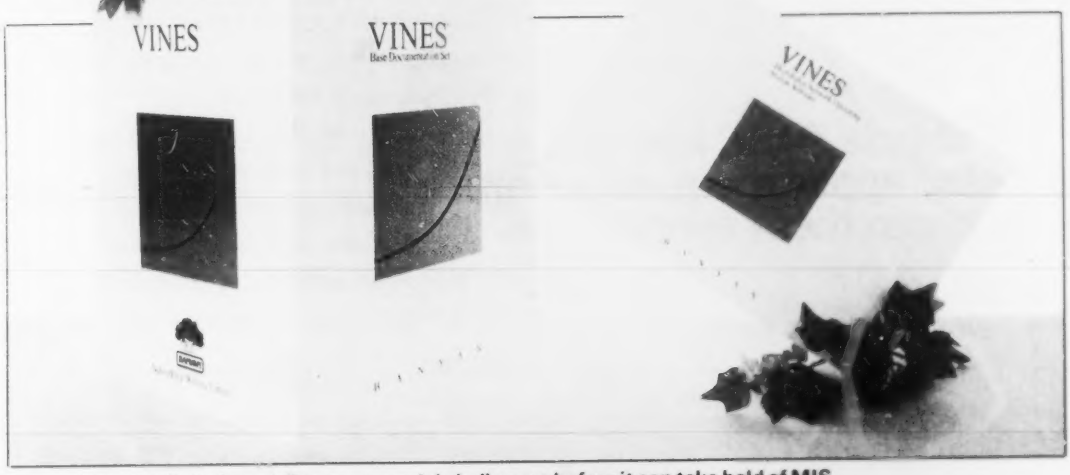
MAY 15, 1991

DATAMATION

FOR MANAGERS OF INFORMATION TECHNOLOGY WORLDWIDE

VOLUME 37
NUMBER 10



Banyan faces technical as well as commercial challenges before it can take hold of MIS.

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BY MARK SCHLACK Strong communications and management features make the Virtual Networking System attractive to IS. Now Banyan must win confidence in its staying power.

Cover photography by Dave Bradley

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DATABASE SERVERS

Relational Takes On OLTP 36

BY JEFF MOAD

Relational technology is coming to OLTP applications by way of massively parallel and loosely coupled systems. The payoff could be unprecedented performance. But are there sufficient tools to manage all that power?

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Teradata Adds Power For OLTP 89

BY MIKE RICCIUTI

The DBC/1012 model 4 offers terabytes of storage and many MIPS of processing power, but will it find a niche as an OLTP machine?

Teradata's Jones has a tall order to fill: the speed and reliability needed for on-line transaction-processing applications.

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BY JOHN McMULLEN Corporate sites are warming slowly to the idea of running Lotus 1-2-3 on an IBM mainframe. But guess what? PCs are still very much a part of the picture.

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BY BOB FRANCIS In the PC world, Autodesk is the indisputable king of CAD. But, as the world moves quickly beyond stand-alone PCs, the king must play catch-up in networks, workstations and programming support.

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BY MARK SCHLACK IS managers practicing this new style of computing are not throwing out their old mainframe applications yet. They're cutting their client/server teeth on new apps, using new software technologies.

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BY LEILA DAVIS IBM's SystemView sounds like a great idea—an integrated systems management architecture open to all. But IBM can't go it alone—12 independent software vendors have signed on to make SystemView real.

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BY DWIGHT B. DAVIS These days, imaging systems are packed with features. But IS managers need to look beyond the bells and whistles to the system's ability to integrate with existing applications.

Union Pacific Railroad rides a sharper image with FileNet.

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Autodesk Connects With Open Systems

In the PC world, Autodesk is the indisputable king of CAD. But, as the world moves quickly beyond stand-alone PCs, the king must play catch-up in networks, workstations and programming support.

BY BOB FRANCIS

Like other successful hardware and software companies that burst forth during the PC revolution of the 1980s, Autodesk Inc. is coming to grips with a very 1990s-style computing reality. Having captured a majority of the PC marketplace with a winning product—Autodesk's AutoCAD computer-aided design package is by far the industry leader—the company now faces customer demands for connectivity and interoperability with other systems.

AutoCAD represents a challenge for IS managers in thousands of design and manufacturing firms. They know that information captured in AutoCAD files represents a strategic resource just waiting to be tapped. But, until recently, trying to link AutoCAD to enterprisewide functions such as databases, back-office functions and manufacturing software wasn't a job for the meek.

That may be starting to change. Last October, the Sausalito, Calif.-based company announced release 11 of its flagship product. The new version of AutoCAD for 386- and 486-based PCs includes greater networking support and improved programming features. And the company has slowly begun to implement a cross-platform strategy for AutoCAD, including flavors for OS/2 and for Sun Microsystems's workstations. Although release 11 isn't yet available for all platforms, Autodesk's game plan is winning support in at least some customer sites.

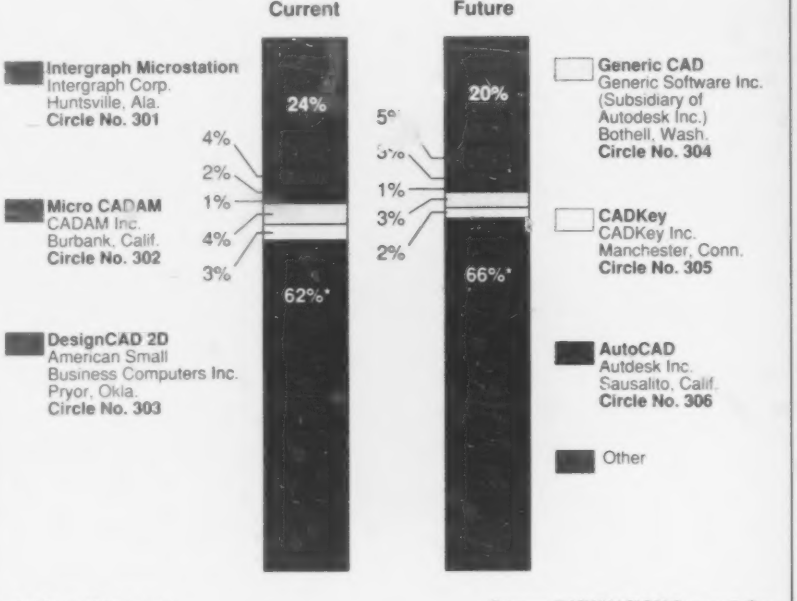
Hughes Radar and Space Systems Group in El Segundo, Calif., is using version 10 of AutoCAD on 28 Sun workstations. Taking advantage of Autodesk's AutoLISP programming language, Hughes integrated AutoCAD with a relational database from Oracle Corp. in an effort to improve the assembly operations in its plants. Planning engineers can now enter assembly instructions into AutoCAD. These instructions are then combined with AutoCAD graphics and data from quality assurance, engineering, processing planning and manufacturing. "It has allowed us to automate that part of the planning process," says project engineer Brant Jones.

Another advantage of this program is that much of the processing takes place on individual workstations, Jones notes. If the processing were centralized, assembly planners would have to wait their turn on a host computer.

Although Hughes Radar demonstrates that AutoCAD does indeed network in the Sun workstation environment, until recently, Autodesk's support of PC networks had been lukewarm at best. Previous versions of AutoCAD could be linked to networks, of course, but Release 11 includes explicit networking features, such as file locking for drawings, and allows users to share program files.

AutoCAD's Growing Grip On CAD

A clear majority of DATAMATION readers responding to the DATAMATION/Cowen & Co.Mini/Micro survey of 1991 buying plans say that AutoCAD will be their choice for PC-based computer-aided design software. Circle numbers appear on Reader Card.



* 56% in 1989 survey

Source: DATAMATION/Cowen & Co.

DATAMATION May 15, 1991

IN FOCUS

AutoCAD Release 11

Autodesk Inc.
Sausalito, Calif.
Price: $3,500 for new users.
$500 to upgrade from release 10
Circle 300 on Reader Card

System Requirements

- Intel-based PC equipped with an 80386 or 80486 processor
- Phar Lap's 386/DOS-Extender running under MS-DOS
- 80287 or 80387 math coprocessor

Key Benefits For IS

- Full compatibility with previous versions of AutoCAD
- Works with a library of more than 550 third-party add-in programs
- Includes the AutoCAD Development System for developing specialized applications in C
- File-locking system to prevent overwriting in a networking environment

Source: Company reports, DATAMATION

It also includes an advanced-modeling extension that allows users to produce 3-D wireframe models. Release 11 is the company's boldest attempt so far to build a network-aware version of PC AutoCAD.

On a practical level, Release 11's new networking features reduce the possibility of data loss when two users call up the same drawing simultaneously. More critical for network managers and IS officials is that the new release can be installed on a network server, meaning only one copy of the program requires support. Don't expect a large cost benefit from going with a network server version, however. A 20-user version costs the same as 20 single copies of the program.

The New World

According to Robert G. Herwick, workstation analyst at San Francisco-based Hambrecht & Quist Inc., these new networking features are requirements of the current marketplace. "The new release is an attempt by Autodesk to move up market. They've sold well into single-user and end-user accounts, but now they've got to go after the networking managers and IS departments. To do that you have to offer credible network support. They've done that. And, more importantly, their reseller channel understands that, which means they can sell it," he maintains.

Autodesk officials agree. "Many of the improvements are a result of customer requests for more connectivity, productivity and versatility," says Malcolm Davies, senior vice president of marketing and sales for Autodesk. "That's a key direction for the company in the future," he adds.

> ☐ THE NEW RELEASE IS AN ATTEMPT BY AUTODESK TO MOVE UP MARKET.

The new release is proving to be something of a double-edged sword, however. As both Lotus Development Corp. and WordPerfect Corp. found out when they pursued their own multiplatform strategies, customers want to be running the latest version of their software across platforms. And that's been somewhat problematic for Autodesk, which has yet to upgrade the 286, OS/2 or Sun workstation versions of AutoCAD to version 11.

According to Hambrecht & Quist's Herwick, the slow delivery of release 11 is hampering some customers who are trying to deal with multivendor heterogeneous environments. "Autodesk didn't realize the extent of this networking phenomenon," he says. "When they just released the 386 version [of version 11]—and not the Sun version and the OS/2 version—fewer users purchased the new release. They need all the versions of the product in order to network their machines together."

Beyond Networking

Beyond improved networking support, release 11's new AutoCAD Development System (ADS)—essentially an extension to the AutoLISP programming language—should further enhance AutoCAD's chances of becoming an enterprisewide package. Users can now write C programs that can be bound directly into AutoCAD. That's particularly important for manufacturers, says Gerald Callagher, a partner with the Dallas office of Chicago-based Andersen Consulting. "Manufacturers generally have a wide variety of machines and want to be able to write programs allowing those machines to communicate," he says.

Gallagher sees promise in the newer, more open AutoCAD. "One of our key missions is to address the issue of hardware and software investment and connecting those stand-alone processes together," he says. At Andersen Consulting's Infomart exhibit, the company has set up a working program linking an AutoCAD engineering drawing to an AS/400 running MAC/PAC, IBM's manufacturing resource planning (MRP II) package. The demo shows information moving from the design group down to the manufacturing floor and back.

"What we wanted to show with that example is that we can link stand-alone workstations to the rest of the manufacturing environment. Our manufacturing clients want connectivity, but they also want to preserve their investment in their current equipment. Many of them also are aware that a top-down imposed solution won't work as well if the users aren't using the tools they want to use," Gallagher maintains.

New Business

Over time, Autodesk hopes it can transfer this user enthusiasm to some of its newer ventures. The company recently formed a separate business unit targeting high-end design and multimedia applications. One of the unit's first offerings is 3-D Studio, a package that allows users to create animated graphics and special effects for business presentations and training sessions. So far, the company is making only limited progress.

The same is true with Animator, Autodesk's first tool for building multimedia applications. Few observers expect quick success here, mainly because the market itself has yet to mature. "I think before multimedia becomes a viable market, vendors will have to make the technology easier to use and cheaper," notes Bob Simko, an analyst at International Technology Group in Los Altos, Calif. Still, Simko admits that AutoCAD's massive installed base of 450,000 users will put Autodesk in a prime position to sell multimedia applications.

According to Kathy Hale, senior industry analyst for San Jose-based Dataquest Inc., Autodesk's greatest challenge is similar to that of other successful PC software companies. "Once you've proved you can saturate the market, where do you go from there?," Hale asks. "Refreshingly, Autodesk is willing to invest in new technologies that may pay off for them and their customers in the future." ▭

Client/Server's Hot In New Applications

IS managers practicing this new style of computing are not throwing out their old mainframe applications yet. They're cutting their client/server teeth on new apps, using new software technologies.

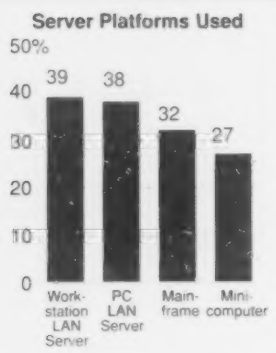
BY MARK SCHLACK

A new study by the Business Research Group (BRG) suggests that "roll out the mainframe, roll in client/server networks" is not the slogan of the day at most of the IS departments actually implementing the technology in large organizations. Overwhelmingly, client/server computing is being introduced in the form of new applications, not reimplementations of big-iron applications.

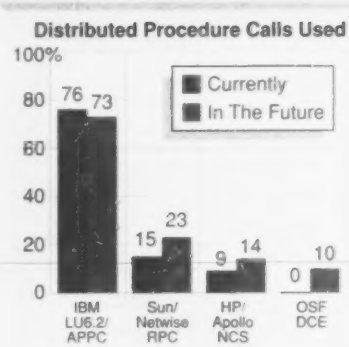
These initial attempts at client/server computing are basically tests of the technology, says the study's author, Tom Wood, who is an industry analyst for BRG, a unit of Cahners Publishing Co. in Newton, Mass. To develop them, IS departments are also taking the plunge into modern software development technologies, such as computer-aided software engineering (CASE) and object-oriented programming. And the work is often being done by in-house people wrestling with unfamiliar technologies like remote procedure calls (RPCs).

The study was based on interviews with 100 IS managers at *Fortune* 1,000 companies, all of which have some experience in client/server applications. In order to qualify as client/server technology, the applications developed by the respondents had to fulfill two basic requirements. First, they had to run on a system involving at least two computers connected together. Second, communication between the two computers had to result in some synergy. These criteria ruled out applications that simply run on a local area network, which BRG had found in an earlier study constitutes client/server computing in the minds of some IS professionals.

Servers



Communications



Self-Service The Rule

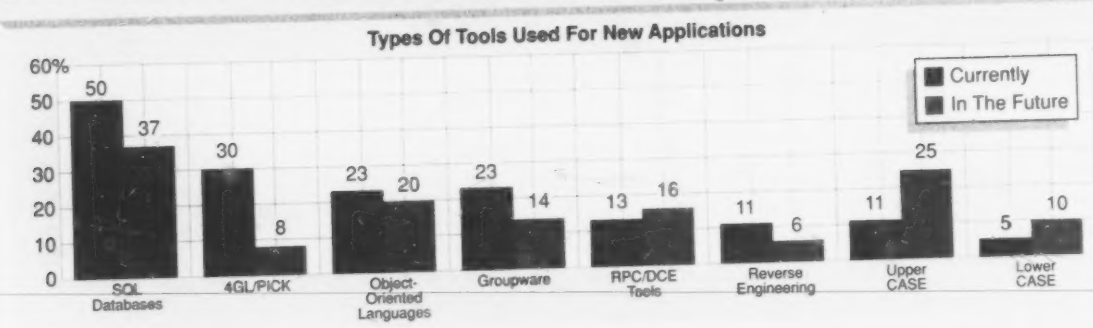
About half of the companies in this study developed their client/server applications using in-house staff. Many companies didn't see the need to employ outside services, and were also concerned about cost, confidentiality and turnaround time.

Whether developed in house or by outside developers, 70% of the applications were brand new, and 30% were reimplementations. Not surprisingly, 63% of the reimplementations were former mainframe applications. Typically, they were interactive time-sharing (48%) or batch (40%) applications; few respondents (13%) ventured into client/server transaction processing. One of the main motives for reimplementation was to shrink substantial backlogs in mainframe development and processing schedules.

"Right now," says Wood, "client/server applications are generally not reimplemented off the mainframe. But this will change as client/server applications become more complex, and IS develops more expertise."

The implementation of client/server computing is already bringing about a shift toward more modern software technologies. Half of the respondents' brand-new client/server applications were built on Structured Query Language (SQL) databases; 35% of respondents listed SQL databases as the most important tool in developing the application. More than half of the respondents say they rely on the high-level languages supplied by database vendors for development. Only

Software Development



30% got down into the nitty gritty of coding in C. C++, COBOL and other programming languages were used even less often.

The future holds even less hand-coding, according to the survey. When asked about tools that will be used over the coming 12 to 18 months, SQL databases (37%), upper CASE (25%) and object-oriented languages (20%) topped the list. Upper CASE focuses on automating the front-end requirements and analysis and design phases of software development; lower CASE helps programmers with the back-end coding and maintenance functions.

The communications aspect of client/server systems is forcing developers to explore new technologies, as well. Client/server computing requires specialized software to communicate between software modules distributed across the system. The survey found IBM's LU6.2/Advanced Program-To-Program Communications protocol to be the most widely used remote procedure call (76%). Boulder, Colo.-based Netwise Inc.'s RPC Tools, which is licensed by Sun Microsystems Inc., ran a distant second (15%). Survey respondents expect future deployments of client/server applications to largely follow this pattern, as well.

Graphical user interfaces were used in only 31% of the client/server applications. That's surprisingly low, since client/server computing has a strong association in many minds with graphical interfaces. When GUIs were employed, the big winner was Windows 3.0 (45%); Presentation Manager was second (26%).

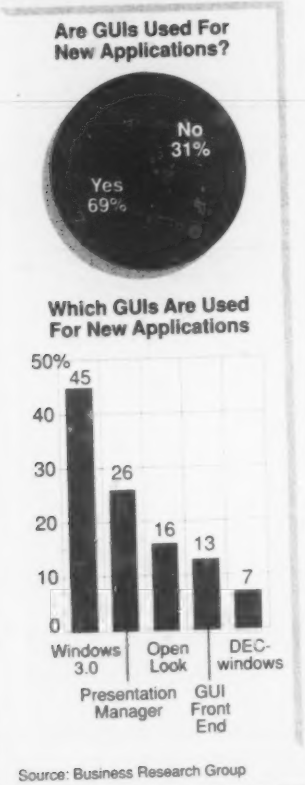
Future Client/Server Plans

After surviving initial client/server implementations, the 100 IS managers surveyed by BRG are taking the future one day at a time. Practically three-quarters say they will decide on future implementations generally on a case-by-case basis. More than half (53%) are also being driven to employ the client/server model as an outgrowth of general downsizing plans. About two-thirds of IS managers would accelerate their client/server plans if workable software-reengineering tools were available to convert existing applications.

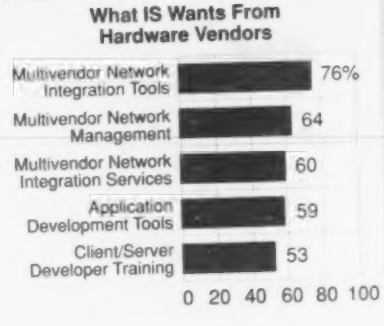
As they move forward, these IS managers are strongly committed to using existing staff, rather than hiring new people with specific client/server skills. That's why more than three-quarters of respondents agreed that retraining their development staff to use new client/server tools and languages poses a major challenge. And the survey shows they expect hardware vendors to play a major role in training developers. They are also looking to vendors to deliver integration tools and services and multivendor network management. □

For more information, call Nancy Finn at (617)-964-6204, fax her at (617)-558-4402 or write to her at the Business Research Group, 275 Washington Street, Newton, MA 02158.

Graphical User Interfaces



Support



MARKET INSIGHTS

AN ANALYSIS OF ECONOMIC TRENDS

The Worst Is Behind Us; The Future Looks Bright

BY MADELINE FRANCHI
Cahners Economics

Ouch! The worsening economic situation in December pulled the DATAMATION Information Systems Performance Indicator (ISPI) down to 95.42 from a revised 96.76 in November. Orders for all types of information systems equipment in December 1990 plummeted 8.8% below their level in December 1989—the first such 12-month decline since early 1967. The full brunt of this crash fell on computer and peripherals manufacturers. Orders received by U.S.-based computer companies in December were 11.7% below the same month in 1989.

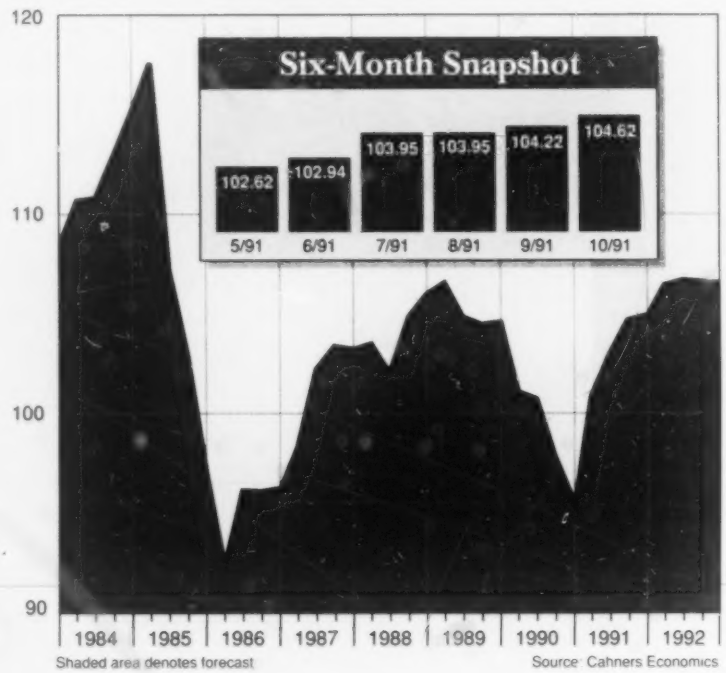
Your suppliers are waiting, in the hope that you will soon start buying in earnest again. With the end to the war in the Middle East, our forecast says you will most likely start investing any time now. Some preliminary numbers for January and February available at press time suggest that investors and businesses had already regained some lost confidence soon after the start of the conflict. The Standard & Poor's computer systems stock price index rose to 180.82 in January—up 7.6% from the same period a year earlier. Furthermore, data from the nation's purchasing managers show an end to the recession coming sometime in the first half of this year. The National Association of Purchasing Management's New Orders Index reversed direction in February after declining for eight months.

We expect the ISPI to make a modest turn upward after January and continue a steady climb ending 1991 at 104.91. The expansion is expected to continue throughout next year, with the indicator surpassing the previous high reached in March 1989. Look for a peak of around 106.7 in mid-to-late 1992. ▭

For more information on Cahners Economics's forecasting services, including seminars, newsletters and database diskettes, call Dan Buchan at (617)-630-2105, fax him at (617)-630-2100 or write to him at Cahners Economics, 275 Washington St., Newton, MA 02158.

The IS Performance Indicator

A Slow Upward Trend Now, But Just You Wait!



Shaded area denotes forecast

Source: Cahners Economics

	Dec. 1990	Nov. 1990	% Change 11/90-12/90	Dec. 1989	% Change 1989/1990
■ Information-Processing Equipment					
Shipments (SA, $ billions)	10.02	9.70	3.3	9.83	1.9
New Orders (SA, $ billions)	9.66	9.48	1.9	10.59	-8.8
Unfilled Orders (SA, $ billions)	28.51	28.82	-1.1	29.31	-2.7
Inventory (SA, $ billions)	19.94	20.85	-4.4	22.31	-10.6
■ Computer Production Workers					
Employment (NSA, thousands)	270.2	270.5	-0.1	289.6	-6.7
Average Weekly Hours (monthly avg.)	43.5	42.1	3.3	43.1	0.9
■ Stock Index					
S&P's Computer Systems Stock Price Index	176.9	165.2	7.1	164.3	7.7
■ Contracts & Orders					
New Plant & Equipment (SA, $ billions)	44.9	40.5	10.9	48.9	-8.2

SA= seasonally adjusted.
NSA= not seasonally adjusted

Source: U.S. Commerce Dept., Standard & Poor's forecasts, Cahners Economics

MARKET INSIGHTS

A SURVEY OF TECHNOLOGY TRENDS

My Oh My, - Look At EDI Fly

BY WARREN CHILDS
Business Research Group

Fortune 1,000 firms are turning in large numbers to electronic data interchange to conduct a wide array of business activities, from purchasing and receiving goods, through accounts payable, all the way to distribution and sales.

Almost two-thirds of the members polled in the latest DATAMATION Technology Panel survey say they have either implemented EDI already (47%) or are in the process of doing so (15%). And two clear leaders are beginning to emerge in this market, according to panel members: IBM and General Electric Information Services (GEIS).

EDI can either be set up on a private company-to-company network among trading partners or through value-added network (VAN) service suppliers, such as IBM, GEIS and U S Sprint Communications Co., which can provide the network services and can perform protocol translation between EDI protocols and company-specific forms transmission procedures.

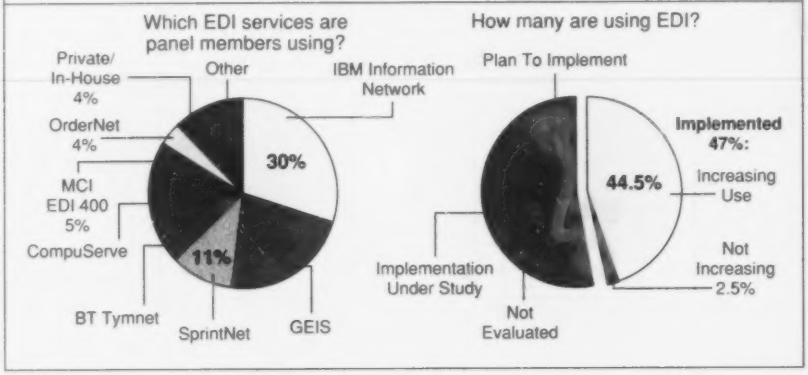
Of the panel members who have already implemented EDI, 30% said they are using IBM's Information Network as the VAN service of choice for their EDI system; 22% said they are using GEIS. Following these two leaders—at a distance—are five other VANs. SprintNet, at 11%, and BT Tymnet, with 9%, head up this pack of also-rans. Only 4% of our panel members say they are using private networks.

By allowing businesses to electronically transmit documents in a standardized format, EDI greatly reduces the cost, time and manpower required to mail and process such documents.

Perhaps that's why virtually all of the panel members who have already implemented EDI (95%) say they plan to expand its use throughout their business operations in the future. □

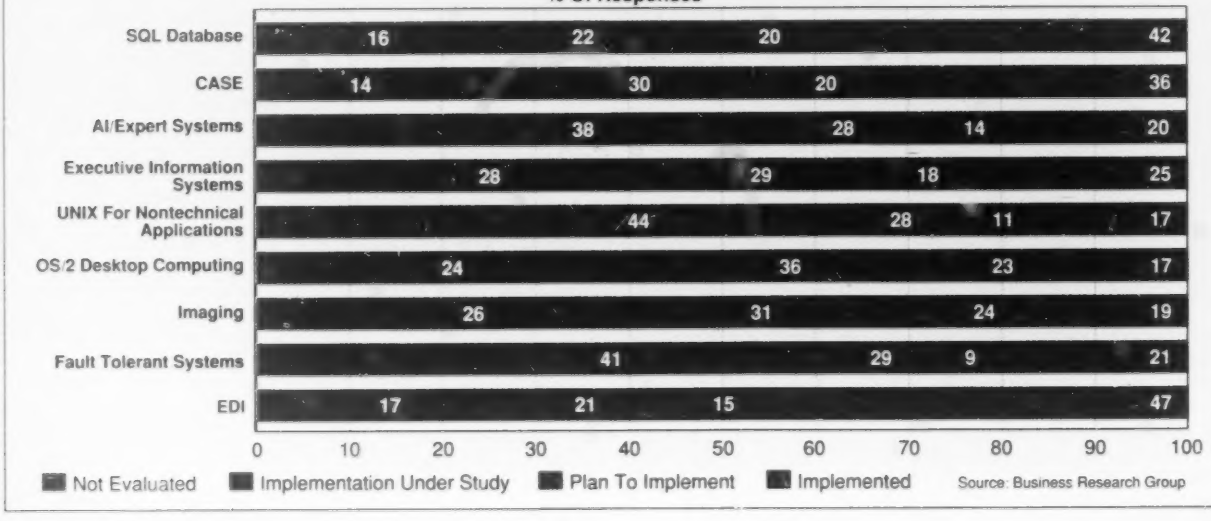
For more information, call Nancy Finn at (617)-964-6204, fax her at (617)-558-4402 or write to her at the Business Research Group, 275 Washington Street, Newton, MA 02158.

Divvying Up The EDI Pie



DATAMATION's Technology Implementation Index: Systems And Software

DATAMATION each month surveys a select group of its readers--the DATAMATION Technology Panel--to investigate the implementation of new technologies by key user organizations.


% Of Responses
SQL Database 16 22 20 42
CASE 14 30 20 36
AI/Expert Systems 38 28 14 20
Executive Information Systems 28 29 18 25
UNIX For Nontechnical Applications 44 28 11 17
OS/2 Desktop Computing 24 36 23 17
Imaging 26 31 24 19
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Source: Business Research Group

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